Remarks

Entry of this amendment, and allowance of all pending claims are respectfully requested. Claims 1-19, 27-45, 53 & 55-73 remain pending.

Initially, applicants gratefully acknowledge the indication of allowance of claim 53, and the indication of allowability of claims 2-5, 7-16, 28-31, 33-42, 56-58 & 61-70, if rewritten in independent form, including all the limitations of the base claim and any intervening claims. In response, applicants herein rewrite claims 2, 7, 28, 33, 56 & 61 in independent form, including all the limitations of the base claim and any intervening claims. Thus, claims 2-5, 7-16, 28-31, 33-42, 56-58 & 61-70 are also in condition for allowance.

The non-elected claims 20-26, 46-52, 54 & 74-80 are canceled herein without prejudice to the refilling thereof in a subsequent divisional application. Further, claims 10, 36 & 64 are amended to correct a misspelling.

By this paper, independent claims 1, 27 & 55 are amended to more particularly point out and distinctly claim the subject matter of the present invention. These amendments represent a bona fide attempt to advance prosecution of this application and obtain allowance of the remaining claims and are in no way meant to acquiesce to the substance of the initial rejection. It is believed that the amendments to claims 1, 27 & 55 place all remaining claims in condition for allowance and such action is respectfully requested.

Claims 1, 6, 17-19, 27, 32, 43-45, 55, 60 & 71-73 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (U.S. Patent No. 5,592,226; hereinafter Lee) in view of Sethuraman (U.S. Patent No. 6,563,549). This rejection is respectfully traversed to any extent deemed applicable to amended claims 1, 27 & 55 presented herewith.

As recited in claim 1, for example, applicants' invention comprises a method of processing a sequence of video frames. The method includes dynamically encoding the sequence of video frames to produce a pseudo-constant bits per frame compressed signal at a scene change within the sequence of video frames. This dynamically encoding includes detecting when a new scene occurs in the sequence of video frames, and responsive to the detecting, dynamically determining a group of frequency domain pixel data to be retained for a frame of the new scene using a frequency domain data management model.

In accordance with the present invention, a dynamic encoding strategy is presented for producing a pseudo-constant bits per frame compressed signal notwithstanding that the sequence of video frames is moving from a current scene to a new scene. This is accomplished, in part, by dynamically determining a group of frequency domain pixel data from a current scene to be retained for a frame of a new scene. This dynamically determining employs a frequency domain data management model (see, for example, page 7, lines 14-18, as well as the discussion at pages 10 & 14 of applicants' specification regarding a frequency domain data management model 120 (FIG. 1)).

An "obviousness" determination requires an evaluation of whether the prior art taken as a whole would suggest the claimed invention taken as a whole to one of ordinary skill in the art. In evaluating claimed subject matter as a whole, the federal circuit has expressly mandated that functional claim language be considered in evaluating a claim relative to the prior art. Applicants respectfully submit that the application of these standards to the independent claims at issue (i.e., claims 1, 27 & 55) leads to the conclusion that the recited subject matter would not have been obvious to one of ordinary skill in the art based on the applied patents. Specifically, applicants respectfully submit that a careful reading of Lee and Sethuraman fails to teach or suggest multiple aspects of their above-summarized independent claim 1 (and similarly independent claims 27 & 55).

Lee describes a method and apparatus for video data compression using temporally adaptive motion interpolation. Specifically, in a system for compressing video data, temporally adaptive motion interpolation based on temporal characteristics of human vision is used for establishing threshold levels relative to the degree of motion as a whole (global motion) between frames. The global motion between successive frames in a group of pictures (GOP) is measured to determine if the motion is less or greater than the established threshold levels for determining the designation of I, P & B frames, spacing between I and P reference frames, and the number of bits used for each frame, and B frames therebetween (see Abstract). At Col. 11, lines 30-35, Lee describes the existence of two different bit allocation schemes that may be used. The first scheme is a constant bit allocation scheme where the bit allocation for each picture type, except B, is always constant from GOP to GOP regardless of the number of detected scene segmentation points (i.e., scene changes of Type 0).

Initially, applicants respectfully submit that Lee is not describing an approach for dynamically encoding a sequence of video frames to produce a pseudo-constant bits per frame compressed signal since Lee expressly excludes B pictures from receiving a constant bit allocation.

Further, applicants respectfully submit that a careful reading of Lee fails to uncover any discussion of a technique for dynamically determining a group of frequency domain pixel data to be retained for a frame of the new scene, let alone an encoding approach which dynamically determines the frequency domain pixel data using a frequency domain data management model.

The Office Action references Col. 21, lines 25-30 as allegedly suggesting applicants' recited dynamically determining of a group of frequency domain pixel data to be retained for a frame in the new scene. However, applicants respectfully submit that these lines of Lee discuss data in the pixel domain, not the frequency domain. Further, a careful reading of Lee fails to uncover any suggestion of an approach for dynamically determining a group of frequency domain pixel data to be retained for a frame in the new scene using a frequency domain data management model.

Advantageously, applicants' invention employs a frequency domain data management model, which better manages the bit usage/quality tradeoff than can be accomplished in the pixel domain. In the frequency domain, applicants' frequency domain data management model is better able to remove less significant data than can be accomplished in the pixel domain. By employing a frequency domain data management model at the scene change, applicants minimize the degradation in pixel quality, while still maintaining a pseudo-constant bits per frame compressed signal. Neither Lee nor Sethuraman disclose filtering of frequency domain pixel data at a scene change using a frequency domain data management model to produce a pseudo-constant bits per frame compressed signal.

Sethuraman is cited in the Office Action for teaching that a typical MPEG encoder intra-codes a large percentage of macroblocks in a first frame upon a scene change, and for allegedly teaching that only a portion of the data needs to be refreshed in a scene change. However, a careful reading of Sethuraman fails to uncover any teaching or suggestion of applicants' recited technique for dynamically determining a group of frequency domain pixel data to be retained for a frame of a new scene using a frequency domain data management model, wherein the

frequency domain data management model facilitates production of the pseudo-constant bits per frame compressed signal.

Since neither Lee nor Sethuraman discloses a processing technique for dynamically encoding a sequence of video frames to produce a pseudo-constant bits per frame compressed signal at a scene change which includes (1) dynamically determining a group of frequency domain pixel data to be retained for a frame of the new scene; and (2) accomplishing the dynamically determining using a frequency domain data management model, applicants respectfully submit that their recited invention of independent claims 1, 27 & 55 would not have been obvious to one of ordinary skill in the art based thereon.

Reconsideration and withdrawal of the stated rejection is therefore respectfully requested. The remaining dependent claims at issue are believed allowable for the same reasons as the respective independent claims, as well as for their own additional characterizations.

For all of the above reasons, applicants respectfully request an indication of allowance of all pending claims presented.

Applicants' undersigned attorney is available should the Examiner wish to discuss this application further.

Respectfully submitted,

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